

INTRODUCTION

The Department of Commerce (DOC) Office of the Chief Information Officer (OCIO) requires systems engineering and software design and development support for implementation of a departmental intranet. This intranet will be a distributed, extensible, Department-wide product that is robust, well-documented, and capable of supporting immediate and future growth requirements. Specific objectives of this requirement include:

- Specifying a framework for the intranet that enables portals and other core applications
- Developing and documenting core infrastructure to include the directory and authentication services and inter application communication protocol
- Developing the core applications of the intranet that will become a standard for developers to use as templates for future applications.

Critical to the success of this effort will be the ability of the contractor to develop easy-to-use software that can be integrated into the existing intranet framework at the DOC with a minimum of disruption and cost. It is also essential that the new intranet be secure, robust, and extensible.

INDUS Corporation (INDUS) is pleased to submit this proposal to provide technical support services for the OCIO. We have supplemented the INDUS Team with a subcontractor, 3i Systems Inc., another small business whose staff have more than 14 years of DOC experience, including 12 years working for the OCIO. By combining the information technology skills and experience of both companies, the INDUS Team, a **100% small business team**, meets the Government's "best value" evaluation criteria:

- A **Highly-Qualified Performance Contractor** – INDUS currently provides technical support, web development, database development and maintenance, and data production support for Federal Government agencies including the Departments of Commerce, Transportation (DOT), Justice (DOJ), State (DOS), and Treasury; and the Environmental Protection Agency (EPA), among others. 3i Systems' DOC experience supplements INDUS's capabilities in web development and understanding of the OCIO requirements.
- A **Highly Qualified Subcontractor – 3i Systems Inc.** is a software engineering firm that develops web-based solutions and is currently implementing their web based Federal time and attendance reporting system, webTA, at the DOC. They have also implemented this product at the National Technical Information Service. Their knowledge and understanding of the DOC environment, web development experience and track record of successful performance at DOC make them uniquely qualified to perform the work required by this task order.
- A **Structured Project Management Approach** – INDUS will implement our customer satisfaction and performance-based metrics, and our proven project management processes.
- **Corporate Resources** including the services of INDUS's Centers of Excellence, staff training and development programs, and established human resource and recruiting infrastructure.

1.0 MANAGEMENT APPROACH

INDUS provides a comprehensive support organization that empowers the INDUS Program Manager (PM) to be responsive and adaptable to all OCIO requirements. The PM has the direct support of INDUS's President and CEO, Mr. Shivram Krishnan. INDUS Corporation's

administrative, contract, and staffing teams will dedicate support staff members, as needed, to specifically fulfill OCIO requirements. Our approach will provide OCIO with an extremely low-risk, integrated management team that takes advantage of INDUS's proven program management processes, which have been a significant factor in the success of our projects at the Departments of Commerce, State, Transportation, Justice, and the Environmental Protection Agency.

1.1 Organizational Structure

The INDUS Team supporting OCIO will consist of a comprehensive management structure; the Program Manager will provide comprehensive contract and project management, communicating directly with OCIO contract and program staff. In this fashion, the INDUS Team is able to provide OCIO with an extremely low-risk, integrated management team that takes advantage of INDUS's innovative and proven program management processes. He will ensure the delivery of all necessary corporate resources and perform all administrative functions related to this task.

INDUS has assigned one of its senior program directors, Mr. Robert Alexander, as Program Manager. With more than 21 years of progressive IT and managerial experience, Mr. Alexander has established a reputation and performance record as a successful manager of government contracts. To maintain professionalism, consistency, continuous process improvement, and on-time product delivery, Mr. Alexander will participate in the staffing, and execution phases of tasks on this contract. He will communicate directly with the COMMITS Program Management Office (PMO), contracting officer's technical representative (COTR), and subcontractors. Mr. Alexander will oversee all quality assurance/quality control and preparation of deliverables (including the monthly progress reports).

1.2 Subcontractor Management

INDUS successfully manages subcontractors and consultants to assure high quality and cost-effective performance. We maintain a seamless relationship with our teammates. Our philosophy in the use of subcontractors and consultants is to demand the same level of performance from them as we require of ourselves — high quality technical effort with well-documented results, accomplished in a timely and cost-effective manner. Should personnel or performance problems arise, the PM will address and correct performance problems as quickly and efficiently as possible:

- A personnel, technical or administrative issue is brought to the attention of the PM by OCIO personnel or task staff
- The PM will attempt to resolve the problem by working directly with the individual and his/her technical manager
- If the subcontractor's technical manager cannot resolve the problem, the PM will approach subcontractor executive management
- As a final step, the PM may bring the personnel problem to the attention of INDUS's President and CEO, who will work with the PM and subcontractor executive management to resolve the problem

We will issue a subcontract that parallels the COMMITS prime contract. By specifying the scope of work, technical labor hours, and period of performance, INDUS will issue tasks to 3i Systems. Work plans will then be required from 3i Systems. These will be reviewed and approved by the INDUS PM for compliance with the overall contract, in accordance with INDUS quality control standards. The subcontractor work plan will then be incorporated into the overall Project Plan submitted to the OCIO COTR for approval. Once the COTR approves the work plan, INDUS will approve the subcontractor work plan. Subcontractors are required to submit progress reports to INDUS in the same manner that INDUS must report to OCIO. The work accomplished during the previous

reporting period, and the associated costs incurred, will be described along with significant achievements, problems encountered, and corrective actions taken. Work planned and expected accomplishments for the following period will also be described. INDUS will use these progress reports to monitor subcontractor performance.

2.0 TECHNICAL APPROACH AND QUALITY ASSURANCE PLAN

The INDUS Team's approach combines our technological expertise with DOC/OCIO knowledge of the requirements to develop a **best value, knowledge-based** solution. Further, quality and performance go hand-in-hand at INDUS. Accordingly, our proposed project staff is experienced with managing complex projects requiring the design, development, maintenance, and support for leading-edge web capabilities. Activities they will perform include requirements analyses, software design and development, quality assurance (QA), operations, troubleshooting, and technical support. INDUS understands the developmental activities inherent to the work required by OCIO.

2.1 Technical Approach

OCIO's Request for Solutions (RFS) has identified nine task areas to be addressed. The following sections present our technical approach for performing the specific tasks. This plan will identify specific deliverables. A tentative delivery schedule follows the task descriptions.

INDUS will ensure high quality performance through the use of established system engineering techniques and adherence to rigorous QA procedures including accepted software engineering practices. All components are subject to rigorous design and documentation standards and independent code reviews before being placed into production. All source code and documentation is maintained in a version-controlled repository. To ensure high-quality software and documentation products, no software or documentation will be placed into production until all software designs and prototypes have been approved by OCIO and all testing has been completed to meet performance requirements. All products will be made available to OCIO so that alpha and beta testing can be performed. This level of independent testing will help ensure the highest quality and fewest defects in production software. INDUS will work closely with OCIO staff to develop methods for improving current processes (e.g., database design, performance tuning) and designing and developing new products.

2.1.1 TASK 1 – STANDARDS AND PROTOCOLS RESEARCH

This initial task is of critical importance and not one to be done in haste. The INDUS Team will research existing standards, protocols, and products (including prior work performed for the DOC) that relate to the intranet infrastructure, directory service, user and application authentication service, and inter-application communication protocol. We will deliver a white paper detailing the outcome of the research. In addition to the white paper a web site containing links to appropriate resources shall be made accessible on the world-wide-web.

The INDUS Team, led by Dr. Mark Lattanzi, will conduct extensive searches for related material particularly on the web. Likely suppliers of commercial products to substantially meet the government's requirements will be contacted including Oracle, Yahoo!, Apache and Netscape. Additionally we will search user group, discussion and other sites that likely have related information available, such as IETF (Internet Engineering Task Force), RFC's (Request for Comments), deja.com, and slashdot.org.

We will deliver the white paper 10 business days after project initiation. After delivery of the draft white paper the project manager shall schedule a conference with the government to discuss the findings within 3 business days of the delivery. After the conference a final draft of the white paper shall be delivered.

2.1.2 TASK 2 – INTRANET ARCHITECTURE DOCUMENTATION

Upon completion of Task 1 and the determination of the off-the-shelf and custom-developed components of the intranet are made, we will develop detailed documentation of the proposed intranet. The documentation will include detailed diagrams of the proposed intranet architecture for the physical network as well as logical components and of the communication protocols, user authentication protocols and interfaces, and the directory protocols and schema.

We will deliver the draft documentation 15 business days after project initiation. After delivery of the draft documentation the project manager shall schedule a conference with the government to discuss the findings within 3 days of the delivery. After the conference a final draft of the documentation shall be delivered.

2.1.3 TASK 3 – PROJECT PLAN

The draft project plan included with this proposal shall form the basis of the final project plan delivered for this task. Upon completion of Task 2 the project manager will schedule a conference with the appropriate government representatives to review and modify the draft project plan to accurately reflect the delivery schedule of tasks 4 through 8.

A critical objective for the task process is timely compilation and submission of a detailed project plan. The project plan will contain a requirements list, a list of assumptions, and work breakdown structure with a task timeline. INDUS is in the process of attaining a Software Engineering Institute (SEI) Capability Maturity Model (CMM) Level 2 certification, and proposes to conduct all OCIO support activities in keeping with SEI Level 2 procedures. As a part of this process, INDUS will carefully research and document all task requirements, and have those requirements approved by OCIO personnel, prior to task performance. In addition, INDUS staff will prepare a detailed list of assumptions and a task timeline for OCIO approval and, if needed, prioritization. The work plan then will be amended to reflect agreements made during the OCIO review process. This thorough preparation will ensure that task performance can be effectively directed and readily evaluated for compliance with OCIO's inspection and acceptance policies.

Another benefit of using SEI Level 2 procedures is that the extensive documentation required during the preliminary stages of a project provide excellent references by which to measure project performance. The detailed requirements list provides a checklist, focusing acceptance testing on the required functions and guaranteeing that those critical portions of the application operate in an error-free manner. In addition, the task timeline provides a standard against which delivery can be measured, and the list of assumptions provides the specifications for the test environment. Overall, the primary benefit of using SEI Level 2 procedures during OCIO support operations will be the ability to readily quantify, and thereby evaluate, performance across all task areas.

Tasks 4 through 9 are dependent upon the outcome of Tasks 1 through 3. The level of effort on these is based on our current knowledge of the OCIO environment and requirements. Prior to proceeding on these tasks we will review the estimates (level of effort and schedule) and revise them

accordingly based on the information we have gained in the first three tasks. This review and revision may result in level of effort and schedule changes from our initial estimates as a result of more, and more detailed information and understanding, even if the scope of work does not change.

2.1.4 TASK 4 – CORE INFRASTRUCTURE LIBRARIES AND DIRECTORY SETUP

INDUS will develop the following sample applications:

- Inter-application communication protocols in each of the following: perl, PHP and Java.
- Application libraries in each of the following: perl, PHP and Java.

The Authentication software is a server application that shall be implemented in Java, PHP or perl. The demonstration applications will be simple applications that specifically demonstrate the intended functionality and will be applications designed for developers rather than for end-users. To the extent necessary the user interface will be incorporated within the portal application. However, the applications will be designed to simply illustrate the functionality required. The directory protocol and schema developed in Task 2 will be implemented and documented. It is anticipated that this will be an implementation of LDAP, though the INDUS Team will not make this recommendation until the appropriate research is conducted. Along these lines, we have independently developed Java servlets that interface with LDAP via JNDI.

The success of this task is dependent on Government Furnished Equipment (GFE). The OCIO must provide the INDUS Team with access to the web servers, portal software, and the directory software for the intranet environment.

2.1.5 TASK 5 – DIRECTORY ADMINISTRATION APPLICATION

The specific requirements for this task will be identified in Task 3. We anticipate that we will extend the functionality of existing applications that support the directory protocols rather than develop this application completely. Our product selection will consider communications protocol, DOC server environment, security and other applications to ensure that the new software will work within the boundaries of the Department's IT infrastructure. Our proposed project team has already developed prototype interfaces using Java to support this application for the OCIO. It was this prototype that was used in the development of the statement of work for this Task Order. The final selection of tools will be determined upon completion of preceding tasks. This application is central to the operation of some of the other intranet applications and includes database development to store resources related to individuals and groups.

Our process includes an initial brainstorming session to identify the forms and handlers and data requirements for the basic functionality of the application. This provides a basis for accurately estimating the time required to complete the application. We use a storyboarding process to initiate the detailed design and assign the tasks related to each module to the appropriate engineer. As code is developed it is checked into the source repository as it is tested. Inline documentation and check-in messages provide a detailed description of each module. As an application approaches beta testing, a code-freeze is implemented. This allows for extensive testing without the introduction of new defects. If modifications are required, independent code reviews and developer justifications are required. By using a version control system, generally CVS, our developers can easily reproduce prior version and deploy applications in a controlled fashion.

2.1.6 TASK 6 – PERSONAL HOMEPAGE AND OFFICE/GROUP PORTAL APPLICATION

The detailed requirements for this application will be identified in Task 3. However, we anticipate that much of the functionality required to support this task is included with the portal application that will be implemented, though it will need to be integrated into the DOC implementation to support the authentication components and the desired look-and-feel.

Our team's extensive experience with object-oriented design and development will greatly assist with this application. The nature of the requirements lend well to an object-oriented approach. This application will permit individuals and groups to customize the interface of the intranet to their specific needs. This requires that applications be treated as objects that can perform independently, but must provide an interface that can be handled by the portal application. Development that is required will follow the basic process is described in Task 5. We will develop a detailed implementation plan after Task 3 is completed.

2.1.7 TASK 7 – NEWS/BROADCAST APPLICATION

Final requirements for this application will be completed with Task 3. The INDUS Team will implement this application as specified in the RFS. The implementation tools may vary depending on the other tasks. Specifically, this application will be designed and developed to provide users and groups with context sensitive news so they get the information they need without having to search for it. We will develop a detailed implementation plan after Task 3 is completed. Our standard development methodologies as described above will be used to implement this application.

2.1.8 TASK 8 – WORK REQUEST TRACKING APPLICATION

As the developer of the original work request tracking application, 3i Systems has a extensive knowledge of OCIO's requirements for this task. We will implement the re-engineered process using the protocols and libraries developed in these tasks. The development team will select the appropriate development tools and design the application using accepted industry practices. The application will be diagrammed and individual forms reviewed with the government. We will design the individual forms and relationships among them, and present them to the government project manager for approval prior to implementation. The INDUS Team project manager will meet with the government staff to review and modify the design as necessary. Upon acceptance of the design, development of the application will commence. Though the specifics of the implementation depend on the initial tasks, we anticipate that the application will be developed using a language such as Java as a 3-tiered application.

2.1.9 TASK 9 – GRAPHIC DESIGN AND APPLICATION SUPPORT

Graphic design and application support is required throughout the life of this project. INDUS will provide graphic artist support to assist OCIO in the development of the basic look-and-feel of the intranet site. This work will be performed by a member of the team who has provided graphic support to the OCIO in the recent past, and has a clear understanding of the type of graphics they requires. Additionally, the work previously performed will provide a strong basis for the development of new graphic designs. We are confident that with this level of understanding and our understanding of the OCIO requirements that we can accomplish the support within the hours defined for this task. However, when we perform Task 3, we will reevaluate the requirements.

2.2 Draft Project Plan

For purposes of this proposal the assumption is made that this project will begin on September 11, 2000.

| Task | Start Date | End Date | Level of Effort (hours) |
|------------------------------------|------------|------------|-------------------------|
| 1. Research | 09/11/2000 | 09/29/2000 | 360 |
| 2. Documentation | 10/02/2000 | 10/17/2000 | 240 |
| 3. Project Plan | 10/18/2000 | 10/20/2000 | 20 |
| 4. Infrastructure | 10/23/2000 | 11/10/2000 | 400 |
| 5. Directory Admin | 11/14/2000 | 11/30/2000 | 240 |
| 6. Home Page / Portal App | 12/01/2000 | 12/15/2000 | 240 |
| 7. News App | 12/18/2000 | 01/05/2001 | 240 |
| 8. Work Request Tracking App | 01/08/2001 | 03/16/2001 | 628 |
| 9. Graphic Design and App. Support | 10/02/2000 | 03/16/2001 | 80 |

2.3 Quality Assurance Plan

The quality of an information system is governed by the quality of the process used to develop it. There are a number of implications surrounding this premise:

- A defined process must exist to govern the MIS effort.
- Checks need to be performed for compliance with the defined process.
- Evaluations of the quality of the process itself are also needed. The quality of the outputs (products) of the effort must also be evaluated to verify that the process works properly.

INDUS adheres to a QA Plan with detailed quality control and performance measurement procedures and practices to ensure that problems are identified and corrected early, thus minimizing risk to the customer. A critical objective for the task process is timely compilation and submission of a detailed work plan. The work plan will contain a requirements list, a list of assumptions, and work breakdown structure with a task timeline.

As part of this process, INDUS will carefully research and document all task requirements, and have those requirements approved by OCIO personnel, prior to task performance. In addition, INDUS staff will prepare a detailed list of assumptions and a task timeline for OCIO approval and, if needed, prioritization. The work plan then will be amended to reflect agreements made during the OCIO review process. This thorough preparation will ensure that task performance can be effectively directed and readily evaluated for compliance with OCIO's inspection and acceptance policies.

INDUS TEAM BEST VALUE:
Our MIS QA/QC Plan is based on industry standard quality requirements, including SEI CMM Key Process Areas and MIL-STD-498

Our approach, as described above, focuses on achieving 100% compliance to schedule and functionality. Performance against the schedule is tracked with weekly status reports for the COTR and the technical lead. The reports will comply with the guidelines in the COMMITS Program Management and Ordering Guide. When slippage is identified, the PM is responsible for working with the technical lead to resolve the causes and make adjustments to the schedule and staffing as appropriate. These procedures minimize the likelihood of schedule delays, allowing our team to deliver on or before assigned due dates. Our task performance, inspection and problem correction processes, described below, ensure that our deliverables are 100% functionally compliant and the documentation is comprehensive, clear and correct.

Strong commitment to quality performance is implemented through rigorous adherence to QA/QC plans. We will monitor and enforce conformance with these plans on all tasks performed under the

task order. Heavy emphasis will be placed on ensuring that the following quality factors are built into all deliverables: correctness, reliability, efficiency, integrity, usability, maintainability, testability, and interoperability.

The baseline INDUS QA/QC Plan includes three quality review methods, as defined in Figure 1 below. These methods verify that a project is progressing in an orderly and correct manner, and validate that all products and services are being delivered in accordance with acceptance criteria. The PM will ensure that all deliverables submitted comply with client agency policies, procedures, standards, and guidelines, and all TO specific acceptance and schedule criteria.

Figure 1. QA/QC Review Methods

| |
|---|
| WALK-THROUGHS |
| Walk-throughs are used to verify and validate deliverables. Checklists, tailored to address unique task requirements, are used to evaluate deliverable products. |
| MANAGEMENT CONTROL REVIEWS |
| The PM will schedule Management Control Reviews to verify that a particular QA/QC activity has occurred and to ensure a controlled approach to task implementation has been taken. The PM will review each TO project on a regular basis to ensure compliance with the established work plans. |
| QUALITY ASSESSMENT REVIEWS |
| To ensure that policies, procedures, and standards are being followed, the PM and QA Manager will periodically perform QA Reviews. Reviews will be scheduled to minimize impact on deliverable schedules. The PM will meet with OPA staff to review results and identify required corrective actions. |

3.0 PAST PERFORMANCE

Since inception, INDUS has established an outstanding performance track record both as a prime contractor and as a subcontractor on multiple Federal IT services contracts. INDUS provides outstanding experience and capabilities, as well as proven project and task management capabilities. We are proud to be a key contributor to the successes of our clients. For example, the Environmental Protection Agency's Envirofacts Warehouse has garnered over 20 awards, including the CIO Enterprise Value Award and the NPR Hammer Award. INDUS has received more than 20 letters of commendation, including letters from the DOJ, the EPA and the Immigration and Naturalization Service (INS).

For the past two years the proposed INDUS team has developed three tiered Java applications, including an application framework for quickly and efficiently implementing intranet applications. The 3i Servlet Application Component Library (SACL) includes a rich set of base classes used to build other applications and the libHTML API. The SACL may or may not be used within this task, as the architecture and tools will be selected as part of this task order, but the experience of developing this framework does uniquely qualify this team to support OCIO. INDUS has identified two recent past performance references for tasks that are similar in nature to the OCIO task order. We present them below as examples of our ability to perform this work.

3.1 Department of Commerce – webTA Implementation

Contract Name: webTA Implementation

Customer Name: U. S. Department of Commerce, Office of Human Resources Management

Contract No: 50-SAAA-9-00038

Contract Type: Fixed-price

Contract Value: \$175,000.00

Period of Performance: 8/2/1999-9/2001

Customer Reference: Diane Atchinson (OHRM), 202-482-3731

Dale Lanser (OCIO), 202-482-0223

14th and Constitution Ave., NW, RM 5004

Washington, DC 20230

Project Relevance: Intranet hardware specification, installation and configuration, secure intranet application development using Java and Oracle, intranet application deployment, and intranet security configuration.

3i Systems provided webTA, a web-based intranet application that supports Federal time and attendance reporting requirements, and implementation support, to the DOC OHRM. In addition to the software application, 3i Systems installed and configured server software on several Commerce Department servers, including the IBM mainframe. 3i Systems provides on-going support for the implementation of webTA throughout the department and the implementation of a PKI solution for webTA at Commerce.

3.2 Department of Commerce – Office of Human Resources Management

Contract Name: Human Resources Data System

Customer Name: U. S. Department of Commerce, Office of Human Resources Management

Contract No: 50-CMAA-9-00048

Contract Type: IDIQ

Contract Value: \$1.5B maximum

Period of Performance: 6/99 – 9/04

Customer Reference: Tiffany Hixson, 202-482-2774

Michael Cohen, 202-4821750

14th and Constitution Ave., NW

Washington, DC 20230

Project Relevance: systems planning, design, and development; systems modification and enhancement; requirement, feasibility, and management analysis; technical support/troubleshooting; telecommunications, security, and system access; user documentation, training, system documentation, and miscellaneous on-site support.

INDUS is performing analyses of the Human Resources Data System (HRDS) in the areas of streamlining and improving the current HRDS/web application, streamlining the NFC/Consolidated

Database and creating a turnkey system, and redesigning the HRDSweb System Administration Module. Additionally, INDUS support includes system modification and enhancement, user documentation, training, and system documentation. INDUS performed a thorough review of the current HRDSweb application and determined what improvements could be made. INDUS reviewed server logs to determine system load, key procedures, and estimated response times. In addition, INDUS reviewed existing Oracle database queries to identify database performance bottlenecks and performed a review of the existing system architecture matched to major current, and planned, system functions to determine appropriateness of existing architecture selections with regard to system performance and system development and operations costs. INDUS produced a white paper describing the results of the analysis along with recommendations for improvement efforts. INDUS then reviewed the existing NFC/Consolidated Database download procedure and determined what improvements could be made to it. INDUS is producing a redesigned HRDSweb System Administration Module, converting from the existing client-server Oracle environment to a web-enabled version.

4.0 RESUMES AND REFERENCES

For these activities, INDUS proposes the following key personnel to deliver intranet applications quickly and reliably. Their resumes and references appear in Appendix A:

Robert Alexander, Program Manager—Mr. Alexander has over 16 years of IT management experience. He is the INDUS Program Director for the Department of Commerce's Commerce Information Technology Solutions project (COMMITS) and responsible for overseeing the execution of task orders. These include information systems engineering, systems and operations maintenance and information systems security tasks. His responsibilities include working closely with client contacts and INDUS staff to monitor and ensure contract compliance, quality assurance on all deliverables, staffing, and cost control management.

James Devaty, Senior Software Engineer and Project Manager--Mr. Devaty has nearly 15 years of information systems experience with specific expertise developing applications for the Department of Commerce. He understands the environment at DOC including the relationship among the agencies. His experience includes developing department-wide applications that have provided DOC with excellent value. Mr. Devaty is committed to providing OCIO with the best value solution.

Mark Lattanzi, Ph.D., Senior IT Engineer--Mr. Lattanzi is an accomplished researcher and engineer and has developed internet related curriculum for a major state university. He is a senior developer on the webTA project and has developed internet applications for universities and government clients.

Frank Owen, IT Engineer--Mr. Owen has developed secure systems, including those using internet protocols, for classified defense installations. He is the lead architect of 3i Systems internet development tools including libHTML, a Java based programming API used to build HTML web pages in an entirely object-oriented manner.

Matthew Labarge, Software Engineer--Mr. Labarge has extensive experience developing intranet applications for Fortune 500 corporations. He has data analysis experience and has led a number of intranet application development projects.

APPENDIX A RESUMES

Robert A. Alexander
Program Manager

Professional Summary

Mr. Alexander is an accomplished senior manager and leader with more than 21 years of progressive, hands-on experience in information technology consulting, computer systems and development, business process re-engineering, operations and support for government, commercial, and internal information management organizations. He has a proven track record of consistently achieving bottom line results through technical expertise, business development, leadership, management, and excellent interpersonal skills.

Education

BS, Management and Marketing, Lehigh University, 1976

Professional Experience**October 1999 – Present, INDUS Corporation, Vienna, VA**

Mr. Alexander joined INDUS as the Program Director for the Department of Commerce's Commerce Information Technology Solutions project (COMMITS). He is responsible for developing business and overseeing the execution of task orders. These include information systems engineering, systems and operations maintenance and information systems security tasks. His responsibilities include working closely with client contacts and INDUS staff to monitor and ensure contract compliance, quality assurance on all deliverables, staffing, and cost control management. Mr. Alexander is also responsible for all contract activities and pricing for INDUS proposal and business partnerships. This includes managing the INDUS contracts department and reviewing all business proposals for compliance, completeness and accuracy.

January 1998 – September 1999, Alphatech Corporation, Arlington, VA

Mr. Alexander was recruited as a Program Director for the information technology consulting firm that provides systems engineering, systems integrity, network implementation and operations services to Federal Government. He was responsible for overall management of Alphatech's software engineering, network implementation and operations, and business process re-engineering contracts and included working closely with customer contacts and Alphatech staff to monitor and ensure contract compliance, quality assurance on all deliverables, staffing, and cost control management. Mr. Alexander was responsible for directly managing Alphatech's contracts with the Department of State, National Library of Medicine, Federal Emergency Management Agency, and Defense Information Systems Agency. These projects include network migrations, network operations support, systems integrity, new software development, and migration from legacy systems to client server applications.

November 1996 – January 1998, Intuit Insurance Services, Alexandria, VA

Mr. Alexander was the Vice President of Information Systems and Engineering at this Intuit-owned company that specializes in providing Internet channel for purchase of Insurance products. As part of Quicken Financial Network, IIS represents thirty percent of Intuit's Internet-based business. Responsible for Internet software development, web site and company's internal information systems. The software products included components for developing life and auto insurance quotations and referrals to agents. The software engineering team of twenty IT Engineers developed software to locate Insurance Agents based on the home location of the applicant and included a custom developed GIS module for locating insurance agents. This

software used applicant zip codes and location data from the insurance companies to match customers with agents. The software was developed using Visual Basic, C, C++, Java and used an Oracle data base.

August 1995 – June 1996, Intelidata Technologies (formerly US Order)

Mr. Alexander served as Vice President of Operations for a high-technology company specializing in remote electronic banking technology to lead three diverse departments: Network Operations, Customer Service and Distribution. Objectives included improving services provided by all three departments through restructuring, improved management, and implementation of new support systems. Managed \$7 million dollar annual budget. Also responsible for expanding services to both internal and external customers through provision of additional value-added services and business development activities.

May 1993 – August 1995, BDM Federal, Inc.

As a Principal Staff Member, Mr. Alexander was the Manager of Product Support for a contract with the Environmental Management (EM) Division of the Department of Energy. He led an operations support team that was responsible for ongoing support of a BDM built project tracking system. His responsibilities included directing the directing the activities of the 20 person team. The support activities included user and help desk support, user training, budget formulation support and ad-hoc reporting. The team provided guidance (to EM) for using system generated data for planning and tracking program execution activities, and reporting to Senior DOE management, OMB, Congress and GAO. As point of contact with EM's system integration contractors was responsible for release of BDM software and data on EM's Local and Wide Area Network. Other responsibilities included business development through marketing and proposal development to the Federal Government. The software used in this project included Visual Basic, Sybase, FoxPro.

February 1990 – May 1993, GTE Spacenet

Mr. Alexander was the Manager of Planning and End User Computing for the Information Management Department. As deputy to the director of IM Department, he provided department guidance for software development and operations support of Spacenet financial, accounting, administrative, and human resource systems. Additional responsibilities included managing department's \$7 million annual budget and company's \$10 million investment in computer systems and a nationwide data communications network service.

September 1983 – February 1990, Coopers & Lybrand

As a Manager in C&L's Information Technology Practice, Mr. Alexander was responsible for a number of Federal and commercial client engagements. These included financial applications software development projects, systems operations projects, information technology support for the liquidation of insolvent savings & loan associations, and information technology consulting engagements. He was also responsible for developing business including proposal development for federal, state and commercial clients.

August 1979 – September 1983, Information Consultants Inc., Washington, DC

As a member of the technical staff, Mr. Alexander was responsible for day-to-day operations of financial and commercial timesharing accounts on DEC mainframe computers. These projects included providing client management, systems analysis, software development and operations support of software for Federal and commercial clients. His clients included the Department of Health and Human Services, Department of Agriculture, Department of Defense, and General Services Administration.

References: Bart Yeager, Vice President, INDUS Corporation 703-506-6700 x.3041

James L. Devaty
Senior Systems Analyst

Technical Skills

Project Management

Relational database and application design and development

C/C++, PL/SQL, HTML, Pascal, Fortran

Windows NT, DOS/Windows, Mac-OS, Unix (Linux and AIX), VMS, MVS

Network implementation and management including Internet and intranet services.

Education

B.S. Engineering, minor in Computer Science, Virginia Polytechnic Institute and State University, 1985.

Career Summary**May 1999 to present: President and Senior Systems Analyst, 3i Systems Inc.**

Technical responsibilities include project management, systems analysis, software design and development and consulting. Other responsibilities include financial, marketing and personnel for a software development and consulting firm specializing in Internet technology.

October 1986 to May 1999: Vice President, Internet Technology Group (previously Information Technology Services division) at Ellsworth Associates, Inc., McLean, VA.

Led division providing software development services to government and corporate clients including the Departments of Commerce, Health and Human Services, Interior and State and the Environmental Protection Agency. The division focus is internet-technology based software development including intranet applications, web sites and consulting services. As head of the IT Services division, provided support for applications development and network design, implementation and help desk support. IT Services provided network and PC support for Ellsworth Associates including the implementation of internet services that include a dedicated T1 connection, web services, email and DNS using Linux, Novell 4 and Microsoft NT network operating systems.

Prior to promotion to Vice President served as Program Manager, Project Manager, Senior Systems Analyst, Systems Analyst and Programmer. Development environments include Oracle (PL/SQL), HTML/CGI, perl, C, C++, dBASE dialects, Pascal and other languages for PCs and networks. Project Manager of successive contracts with the Department of Commerce, Office of the Secretary including:

- Implementation of the primary DOC web site at www.doc.gov using Domino (Lotus Notes).
- Development, implementation and maintenance of the department-wide Department of Commerce Time and Attendance System, Work Request Tracking System, Foreign Commercial Service Allowances System, Senior Executive Bonus System, Honor Awards Ceremony System, Congressional Legislation Tracking System and others.
- Managed Help Desk support services.
- Project Management of a contract with the Foreign Commercial Service to provide application development support, Lotus Notes development and administration, Microsoft NT network implementation and administration.

- Implementation of TINet for the Office of Tourism Industries within the International Trade Administration. TINet is a web site that provides tourism statistics and implements an e-commerce system to order documents via the Internet.
- Served as project manager and lead architect for the conversion and implementation of a Paperless Time and Attendance System for the US Geological Survey and subsequent implementation at the Bureau of Indian Affairs.
- Managed a contract at the National Cancer Institute, Grants Administration Branch, for software maintenance and development.
- Managed contract with Supply Management Division, Office of Logistics Management, ADB and RIMS Connectivity Project (ARC) at National Institutes of Health.
- Managed a software support contract for the Office of Inspector General at the Environmental Protection Agency.
- Managed State Department contract to support the Gift of Funds Tracking System for the Curator's office in the Diplomatic Reception Rooms.

References:

Mr. Don Courtney
Supervisory Grants Management Specialist
National Cancer Institute
National Institutes of Health
301-496-8790

Ms. Dale Lanser
Director, Office of Information Systems
Office of the Chief Financial Officer
U. S. Department of Commerce
202-482-0223

Mark R. Lattanzi
Senior IT Engineer

Technical Skills

Software Engineering, Object Oriented Analysis and Design
Java, C/C++, Pascal, Visual Basic, Assembly
SQL, PL/SQL, SQL-Plus, JDBC, HTML, CGI, perl
Unix, DOS/Windows, Mac-OS, VMS
TCP/IP and other network protocols.

Education

Ph.D., Computer Science, Virginia Polytechnic Institute and State University, 1995.
M.Ed., Education, Curriculum and Instruction, Virginia Polytechnic Institute and State University, 1995.
M.S., Computer Science, Virginia Polytechnic Institute and State University, 1989.
B.S., Electrical Engineering, Virginia Polytechnic Institute and State University, 1987.

Career Summary**August 1999 to present: Senior Software Engineer, 3i Systems Inc.**

Developed webTA, a three-tiered application to permit web-based entry of federal time and attendance data at an employee or timekeeper level. webTA is a Java servlet based application using an Oracle database.

August 1995 to December 1999: Assistant Professor, Department of Computer Science, James Madison University, Harrisonburg, VA.

Duties include designing and teaching courses, department and university service.

March 1998 to December 1999: Assistant Professor, Department of Integrated Science and Technology, James Madison University, Harrisonburg, VA.

Joint rank position concurrent with above Computer Science appointment.

September 1991 to May 1995: Graduate Teaching Assistant and Part-Time Instructor, Department of Computer Science, Virginia Tech, Blacksburg, VA.

Duties include designing and teaching courses and assisting professors.

1989 to 1991: Member of Technical Staff, Hewlett-Packard Company, Fort Collins, CO.

Duties include writing low-level device drivers for Graphics Workstations, system administration of HP-UX machines, and software release management.

1988-1989: Personal Computer Lab Manager, Department of Computer Science, Virginia Tech, Blacksburg, VA.

Duties include setting up and maintaining a PC computer lab of Mac-Ls, Mac IIs, and MSDOS PCs.

1987 (Summer): Computer Programmer, Brunswick Corporation Accounting Department, DeLand, FL.

Duties include writing and maintaining COBOL and RPG III programs.

Publications**Book Sections**

Lattanzi, M.R. "Visual BASIC Lab Exercises" in *Programming in Visual BASIC 5.0* by Gary Bronson, Scott/Jones Publishers, 1997.

Journal Articles

Lattanzi, M.R. and D.R. Cosley, "Poser: An Online Reviewing Tool in Java," *Computer Science Education Journal*, to appear, Spring 1999.

Lattanzi, M.R. and S.M. Henry, "Software Reuse Using C++ Classes: The Question of Inheritance," *Journal of Systems and Software*, Vol. 41 (May 1998), pp. 127-132.

Lattanzi, M.R. and S.M. Henry, "Teaching the Object-Oriented Paradigm and Software Reuse," *Computer Science Education Journal*, Vol. 7, No. 1, 1996, pp. 99-108.

Lattanzi, M. and Shaffer C., "An Optimal Boundary to Quadtree Traversal Algorithm," *Computer Vision, Graphics, and Image Processing*, Vol. 53, No. 3, May 1991.

Conference Papers

Heinrichs, K. and M.R. Lattanzi, "Bridging the Gap Between the Classroom Experience and Clinical Application Using Multimedia," 1997 Professional's Educators' Conference, February 1997, Dallas, TX.

Holmes, G. and M.R. Lattanzi, "Research Projects in the field of Education," 1995 Curriculum and Instruction Professional Seminar, April 7, 1995, Blacksburg, VA.

Henry, S.M. and M.R. Lattanzi, "A Software Metrics Generation Tool for the Object-Oriented Paradigm," *Proceedings of the 1993 4th Annual International Conference on Applications of Software Measurement*, Orlando, FL, November 1993, pp. 600-627.

Begole, J., C.A. Shaffer, and Lattanzi, M.R., "The Project GeoSim Graphical User Interface," *Proceedings of the 1993 Virginia Computer Users Conference*, Virginia Tech, Blacksburg, VA, October 1993, pp. 17-28.

Lattanzi, M.R. and S.M. Henry, "Object-Oriented Metrics: Generation and Application," *Proceedings of the 1993 Virginia Computer Users Conference*, Virginia Tech, Blacksburg, VA, October 1993, pp. 53-62.

Henry, S.M. and M.R. Lattanzi, "Reusability Metrics for the Object-Oriented Paradigm," *Addendum to the Proceedings of the 1993 8th Annual Conference on Object-Oriented Systems, Languages, and Applications*, Washington, DC, September 1993, p. 95.

Professional Activities**Conference Participation**

1999 ACM SIG Computer Science Education Conference Treasurer, New Orleans, March 1999.
Panel Chairman, 1998 SIG Computer Science Education, Empirical Studies session, February 1998.

Departmental/Local

Faculty Advisor, Local Chapter of Association for Computing Machinery, 1996 to 1999.
Webmaster, JMU Computer Science Department, 1996 to 1999.
ACM Programming Team Coach for JMU ACM Regional Programming Team, 1995 to 1999.
Southwest Virginia Regional High School Science Fair Judge in Comp. Science, 1994.

Referee/Reviewer

Reviewer for Scott/Jones Publishing Company, 1996 to 1999.

Referee, IEEE Conference on Software Engineering Education, 1996 and 1997.

Referee, Communications of the ACM, 1996 to 1999.

Referee, Journal of Systems and Software, 1994 to 1999.

Referee, ACM SIG Computer Science Education conference, 1994 to 1999.

Referee, Annals of Software Engineering, Special Volume on Software Measurement, 1994.

Memberships

Member, ACM, since 1988.

Member, IEEE, since 1995.

Member, ACM Special Interest Group on Software Engineering, since 1992.

Member, ACM Special Interest Group on Programming Languages, 1992 to 1997.

Member, ACM Special Interest Group on Computer Graphics, 1990 to 1993.

References:

Ms. Dale Lanser

Director, Office of Information Systems

Office of the Chief Financial Officer

U. S. Department of Commerce

202-482-0223

John F. (Frank) Owen
IT Engineer

Technical Skills

Network software development, configuration and administration. TCP/IP and UDP/IP protocols. Development on ethernet, ATM and FDDI. Custom network protocol development.

Relational database modeling and development, especially with respect to web-based interfaces and three-tier architectures. SQL, PL/SQL, SQL-J, Embedded SQL, Java stored procedures.

Java, Swing, JDBC, C/C++, x86 Assembly, HTML, CGI, perl, PHP3, JSP.

UNIX, system administration and programming, especially for Solaris, HP-UX and Linux. Windows NT administration. TCP/IP.

Low-level hardware interfaces, including SCSI device driver development.

Education

M.S., Computer Science, Old Dominion University, 1994.

B.S., Mechanical Engineering, Virginia Polytechnic Institute and State University, 1989.

Career Summary**August 1999 to present: Senior Software Engineer, 3i Systems Inc.**

Developed webTA, a three-tiered application to permit web-based entry of federal time and attendance data at an employee or timekeeper level. webTA is a Java servlet based application using an Oracle database.

1996 to December 1999: Senior Software Engineer, Inter-National Research Institute (INRI), Chesapeake, VA.

Duties include project management, architectural design and implementation, and system analysis of hardware and software requirements.

1989-1996: Mechanical Design Engineer, Norfolk Naval Shipyard, Design Division, Surface Ship Mechanical Branch, Portsmouth VA.

Duties include mechanical design and analysis of mechanical, structural and hydraulic systems, integration and administration of AutoCAD and Intergraph design and modeling systems, and project management for off-site contracts.

1985-1988: Mechanical Engineering Coop. Employee, Philip Morris USA, Richmond, VA.

Duties include design of structures and electro-hydraulic systems.

Software DevelopedDISA Electronic Vault - Technical Lead for Backend Processing

The DISA Electronic Vault (DISA-EV) is a heterogeneous network data backup and recovery application designed for demanding Continuity of Operation (COOP) applications. It applies open-systems, three-tier architecture to the problem of ensuring legacy mainframe databases can be reconstructed overnight in remote locations in the event of catastrophic failures of the primary data processing centers. DISA-EV implements

secure, encrypted transmission of data over a mixed network of TCP/IP, ATM and FDDI channels. Data is stored in the remote location to an unattended robotic tape library that automatically stores and indexes the data, and barcode labels the tapes for quick retrieval. I was lead programmer and sole architect of all of the backend operations, including networking, encryption and compression, and low-level manipulation of the SCSI robotic libraries.

webTA

webTA is a Web-based Time and attendance system for the federal government. It is a n-tiered application based on Java servlet technology. The data repository is implemented an Oracle database. The business logic lies exclusively in Oracle PL/SQL stored procedures. The presentation logic and user-interface state transition model live entirely within a Java servlet environment. The display uses standard client web browsers, whether Unix or Windows based. My role in the creation of this package included architectural design, data modeling and implementation on the servlet and PL/SQL levels. This product is currently undergoing final testing prior to deployment in the field.

LibHTML

LibHTML is a Java based programming API used to build HTML web pages in an entirely object-oriented manner. LibHTML allows programmers to build high-level, reusable HTML objects, with a single-source repository for the structure of those objects. It provides a dramatic increase in maintainability of code-base for HTML projects, as well as providing a clean, encapsulated method for handling cross-browser compatibility. I am the sole architect and current maintainer for LibHTML. LibHTML is now a 3i Systems internal technology.

Robytics - Creator, Architect and Project Lead

Robytics is a client-server application for remote administration and control of robotic tape libraries. The server side is UNIX based, consisting of low-level device drivers for Solaris and HP-UX, a UNIX database for storing tape barcode labels and contents, and a daemon process for arbitrating requests for the tape library resource. The client is a Java based GUI, which queries the tape library at run-time for configuration information, and presents a stylized representation of the library for the user to manipulate. The GUI uses drag and drop operations to represent the corresponding real-world operation. For example, dragging a tape from a drive in the GUI to a slot in the GUI causes the corresponding tape to be physically moved in the actual tape library. This product is undergoing market analysis prior to release as a commercial product.

Nauticus Command Support System, Tactical Decision Aids - U.S. Project Lead

Nauticus Command Support System (CSS) is the premier command and control software used by the United Kingdom Royal Navy. INRI-UK used the expertise of INRI-USA when it was time to create the next-generation Tactical Decision Aids (TDA), in the form of a Routes module, a Movements module, and a Station Planning module. I was US project lead for the Routes and Movements efforts. The two TDA are graphical tools used by military commanders in planning and executing deployments and maneuvers. Engineering the TDA's involved providing a easy to use Graphical User Interface to a smart, adaptable tactical decision backend. The implementation used a Motif user interface talking to a custom middle-tier. The middle-tier module in turn interfaced with a distributed Oracle database.

USMC Program Development Document Database User Interface - Architect and Project Lead

The Marine Corp Program Development Database (PDD) is a Oracle Web Application Server based system for tracking and storing documents throughout the life cycle of their associated contracts. In this project we

replaced the front-end of the existing PDD system with a flexible Java Script menuing system and a Web-based administration tool. This allowed the Marine Corp administrators to remotely administer the database, a capability the previously lacked with the Oracle Forms based administrative tool. This application is successfully deployed at the Marine Corp Headquarters and remote field offices.

NDI Part-Smart / Net-Smart - Project Lead

Part-Smart is a commercial product for part and assembly tracking, and is the primary product of NDI. As a consultant to NDI, lead team that evaluated and revamped their software process, implementing a repeatable system for software development and version control. We also implemented the first portion of Net-Smart, the follow on product to Part-Smart. In this we designed and implemented C++ e-commerce classes for exchange of inventory, pricing and ordering data between the Net-Smart clients and the vendor's servers. Part-Smart is PC-based, using Borland C++ and C-Tree+ database.

Honors and Professional Activities

Marshall-Hahn Engineering Scholarship, 1984.

Virginia EIT in Mechanical Engineering, 1989.

Member of INRI's Software Engineering Process Improvement Group, 1987 to 1999.

References:

Ms. Joan A. Smith, President

Blue-I Technology, Inc.

P.O. Box 9907

Chesapeake, VA 23321

757-405-0000 (office)

757-287-2376 (cellular)

Matthew D. Labarge
Software Engineer

Technical Skills

Java, C/C++, Oracle PL/SQL, Javascript, HTML, CGI, Visual Basic, 8x51 Assembly, Pascal
SQL/SQL-Plus
Base SAS, SCL, SAS/IntrNet
Unix (Solaris, Linux, SCO), Windows NT, Mac-OS, VMS, DOS/Windows.

Education

M.S., Computer Science, James Madison University, 1997.
B.S., Electrical Engineering, Old Dominion University, 1986.
Candidate for Bachelor of Music, Composition, James Madison University, 2000.

Career Summary**August 1999 to present: Senior Software Engineer, 3i Systems Inc.**

Developed webTA, a three-tiered application to permit web-based entry of federal time and attendance data at an employee or timekeeper level. webTA is a Java servlet based application using an Oracle database.

June 1997 to August 1999: Applications Developer, SAS Institute Inc., Rockville, MD.

Technical lead on Dow Corning *webSPC* web-based quality information delivery system. The system allows users to obtain statistical process control charts for products and user-defined product families and process quality index (stability and capability measures) for groups of products defined using any combination of process, geographic, industry, and customer categorizations. The user is able to define profiles that cause automatic periodic production of specified charts, and email notification when processes violate specified control criteria.

Technical lead for the web data entry system for the University of Washington *Early Fluoride Intervention* clinical trial. The system supports clinician's entry of demographic, exam data, and side effect data, prepares pharmacists' prescription information by web delivery and email notification, and provides trial coordinators notification of overdue patients, side effects, trial recruitment efficiency by examination site, and clinician data errors. All system administration is performed via the web.

Technical lead on web information delivery system for a major international pharmaceutical supply company. System allows the user to view current product statistics on a Java ticker application, launch a browser from the ticker on a specific piece of information, and examine the data graphically or in tables summarized by highly specifiable criteria. The user is able to input alarm conditions via a web interface. The ticker checks alarm specifications and graphically indicates alert conditions. The project uses nearly every piece of the SAS/IntrNet tool set.

Designer/Programmer for components of Sprint's web-based *LREM* (Long-Range Economic Modeling) system. Wrote server-side model components that display Sprint market multiples summarized by market and product category intersections for any of five years. The system produces values based on statistical trending, but allows the user to change component and summary values based on business knowledge. The system responds to changes by using successive iteration to solve for the impact of the changes on component economic values, since the values summarize governed by a complex non-linear equation.

Designer/Programmer for components of Sun Microsystems' intranet systems. Wrote Java GUI components to select calendar dates based on a complex customer-defined fiscal calendar. Wrote graphics classes that wrote and delivered graphic output in postscript to allow WYSIWYG printing (bypassing Java's inherent printing problems). Wrote custom graph display classes.

Designer/Programmer of the Java applet used by dental clinicians and research associates in Canada and US participating in University of Washington *TEETH Study* clinical trial. The applet allows each clinician to enter 850 measurements per patient visit from their office to SAS data sets that reside on a server at the University of Washington. It also provides research assistants with a daily task list based on the time elapsed since a patient's last visit to track reminder calls and letters. All system administration is performed via the web.

January 1997 to May 1997: Instructor, James Madison University, Harrisonburg, VA.

Taught Algorithm Development in Computer Science department. Course provides introduction to computing problem-solving, programming using Visual Basic, and stresses principles of software engineering.

September 1995 to May 1997: Independent Software Projects

Designed and implemented a suite of distance learning Java tools currently in use by James Madison University. All parts were remotely administered via web interface and based on a student/instructor/administrator permissions system. The online class meeting applet/server set allowed remote classes and special interest groups within the Computer Science department to log in to a common web page and conduct a meeting with the rest of the class or group. The server program was controlled by a mediator (typically the class instructor or interest group leader), and performed the message transfers, compiled user statistics, and was able to write files containing transcriptions of class sessions. The system could accommodate numerous concurrent class and group meetings. The email distribution system allowed members of the class to write email messages on a web form and choose pre-selected groups of students and group members as recipients. The announcement publishing applet functioned as class announcement center and could be changed only by the instructor.

Developed client and server applications for UNIX Network Account Management System (NAMS) using C socket libraries. The NAMS system allowed administration of an unlimited number of UNIX networked hosts from any host on the system, and provides users a single login access, creating the abstraction of a "network account". The system allows user groups, host groups, and user parameter groups, allowing considerably more flexibility than NIS or NIS+. Changes are made on any member host and transmitted to the NAMS master server, which determines the effected member hosts and notifies them of changes to their individual configurations. The JMU NAMS network contained more than 60 SCO, AIX, SUN-OS, and Solaris hosts.

Designed and implemented online interactive web chess applet and server. In the process, developed reusable generic server and client messaging classes currently used by JMU programmers and in graduate and undergraduate courses for instruction purposes.

1983-1992: Electronics Engineer, Naval Undersea Warfare Center, Virginia Beach, VA.

Project Engineer for redesign of TS-3543/U Digital Data Test Set, currently in use on every Aircraft Carrier, LHA, and LHD class ship in US Navy. Conceptualized, designed, prototyped using 9761 micro-controller (based on Intel 8751 with 16K EPROM), 8243 I/O expander, and 8K external RAM. The system analyzes ships navigation data and evaluates it for use by the aircraft inertial navigation system. Wrote analysis modules, and firmware operating system, including driver for optional thermal printer.

Designed reliability database using VMS Oracle for two submarine inertial navigation systems, each containing hundreds of subsystems and thousands of electromechanical and electronic parts. Developed statistical failure analysis algorithms, implemented using highly structured SQL-Plus queries.

Designed group scheduling and project tracking software using VAX Pascal and DCL (DEC Command Language for VMS) used by submarine and surface inertial navigation groups. Wrote several utilities used by engineers throughout the Command including printer drivers and interfaces between otherwise incompatible commercial software packages.

Designed and fabricated analog and digital circuits using printed circuit and wire-wrap techniques. Design experience includes NPN, PNP, FET transistors, op amps, synchronous and asynchronous digital machines, Programmable Array Logic (PALs).

References:

Dr. Philippe Hujoel
Associate Professor
School of Dentistry
University of Washington
206-543-2034

Mike Cottle
Manager of Finance
Sprint Business
816-854-2156

Alex Choe
Graphic Artist

Technical Skills

Office packages: Excel, Word, PowerPoint, Word Perfect

Graphic & Layout Software: Illustrator, Photoshop, Freehand, DeBabelizer, QuarkXPress, Pagemaker

Multimedia Software: AfterEffect, Premiere, Authorware, Director, Flash, SoundEdit 16, Sound Forge

3D Software: Infini-D, Extreme 3D, Strata Studio Pro, True Space, 3D Studio Max, Softimage 3D, Maya, Lightwave

Web Development Software: Homesite, ColdFusion, Dreamweaver

Operating Systems: Win95/98, WinNT Workstation, Unix, Linux, Mac OS.

Education

B.F.A., Communications Arts and Design (Graphic Design and Electronic Media), Virginia Commonwealth University, Richmond, Virginia, 1998.

Career Summary**2000 to present: Graphic Designer / Web Designer, TVontheWEB, Reston, VA.**

Designs web pages and support graphical solutions for clients. Provides consulting on web applications and streaming media.

Tools: Photoshop, Illustrator, Freehand, Dreamweaver, Flash 4, Fireworks

1998 to 2000: Graphic Artist / Web Developer, Ellsworth Associates, Inc., McLean, VA.

Provided graphics and designed layout for clients web sites. Developed a variety of graphics for the company and its clients.

Tools: Photoshop, Freehand, Illustrator, Lotus Notes & Domino, and Homesite.

Languages: HTML, Java Script, Java, CGI and perl.

Clients: Department of Commerce, & Head Start (DHHS)

1997 (Summer): CBT/WBT Programmer, Tech2000, Inc., Herndon, VA.

Developed computer based training & web based training applications.

Tools: Director, Photoshop, & Premiere.

Clients: BellAtlantic Federal System, & US West.

1996-1997: Multimedia Developer , Instructional Development Center, Richmond, VA.

Developed training multimedia and web-based training for a medical school.

Tools: Director, Authorware, SoundEdit 16, Extreme 3D, & Premiere, Pagemill.

Clients: Medical College of Virginia - VCU.

1995–1996: Lab Consultant, ACCS – VCU, Richmond, VA.

Helped and trained students and faculty on computers.

Provided troubleshooting for software and hardware problems.

References:

Ms. Dale Lanser

Director, Office of Information Systems

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